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STUDY OF DATA COLLECTION PROCEDURES

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Study of data collection procedures

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Abstract

The problem of inconsistency of African data is not new. The determination of the nature and severity of this phenomenon, however, has become of much concern to interested observers. The appropriateness of this concern is reinforced by the need of African countries for timely and accurate data in order to ensure the successful implementation of their economic reform programmes. In this regard, current research has pointed out wide divergences in African data published by various international organizations as well as the central statistical organizations and other public agencies in each country.

As part of the concerted efforts to identify the major causes of the data problem, this study identifies the similarities and major differences in data generating and management activities among selected organizations. Two data-generating agencies in Nigeria were also covered because a preceding study, whose findings prompted this research, was based on Nigeria as a case study. The findings suggest wide divergences in definition and measurement of concepts adopted by these organizations. The widespread non-rendition and/or the inadequacy of returns by African member countries to the international and multilateral institutions also necessitate reliance on staff estimates as substitutes for missing data. These largely account for the significant differences in data on identical indexes reported on the same country by these organizations. The report therefore suggests the development and enforcement of generally accepted statistical procedures. It also advocates the identification and satisfaction of data-related capacity needs of each African country.

I. Introduction

In recent times, great attention is being devoted to the nature and quality of data published on African countries. This is in view of recent research findings that have highlighted inconsistencies among the data series for nearly all African countries. This concern and attention should not be thought unwarranted. For example, effective and efficient management of national resources requires purposeful planning. The usefulness of the planning, however, depends to a large extent on the accuracy of the underlying data. Given the importance of this data accuracy, several local and international organizations publish economic and other categories of data series on various indexes. Most governments of developing countries have also established at least one agency for the generation and management of relevant macroeconomic data.

Reliability is a necessary condition for data used as inputs into any analysis and policy decision process. Findings based on un-reliable data may not be valid (Emory, 1980). Hence the anxiety about the findings of recent research (e.g., Yeats, 1978, 1990; Wells, 1992), which suggest serious inconsistencies among data from different sources. This indicates the unreliability of some of the macroeconomic data used for planning and policy-related research in the affected countries.

Other studies have reinforced the call for concerted efforts to mitigate the problem of data inconsistency on Africa. For example, an evaluation of the activities of the African Economic Research Consortium for the first five years also note that data inconsistency and low quality of macroeconomic data on Africa are among the most daunting challenges confronting the continent (Thorbecke, 1996). The evaluation report therefore solicited concerted efforts to overcome the problem. The severity and potential negative implications of this problem have also been highlighted at various conferences and workshops on African macroeconomic and development issues.

Our report represents the product of efforts to enhance the quality of African data. It provides details of a comparative analysis of data collection procedures by some international organizations that publish macroeconomic and social data on Africa. The essence is to identify similarities and differences in the data generating processes among the various organizations, in order to bring out the facts behind the (divergent) figures contained in the various publications. The analysis included Nigeria, which served as the case study for the report whose findings prompted this study. This will also enable us compare the findings between national and international data publication sources.

The remainder of the report is organized as follows. The next section discusses the background to this study, followed by a discussion of the methodology used in Section III. In Section IV we provide a summary of the study's findings, while the implications of the findings are elaborated upon in Section V. The last section presents the concluding remarks and recommendations.

II. Background

The quality of macroeconomic management is no doubt the major determinant of the performance of an economy. To enhance the effectiveness of this task, most countries, especially the developing ones, engage in purposeful medium- and long-term planning. The realism of these plans is largely grounded in the results of applied research by various researchers and policy analysts using published macroeconomic data, and depends crucially on the validity of the research findings.

The degree of validity of the research is in turn affected by several factors, such as the appropriateness of the measurement techniques and other heuristics and the biases of the analysts and/or researchers (Ariyo, 1993; Solomon, Ariyo and Tomassini, 1985; Tversky and Kahnemann, 1974; Nisbett and Ross, 1980). However, the most important determinant of the validity of research findings is the extent of data reliability. For example, the literature suggests that the whole essence of research design centres around ensuring the reliability of underlying data, complemented with appropriate measurement techniques. In this regard, several researchers, such as Settz, Wrightsman and Cook (1976), Emory (1980) and Bernard (1971) note that research design constitutes the blueprint for the collection, measurement and analysis of data. Hence, the overall quality of research design is measured by the extent to which it enhances the reliability of data and the validity of the research findings.

Most researchers, however, hardly give adequate thought to this desirable attribute, but merely assume the reliability of data being used. Even the limited attempts to evaluate the quality of data have focused on sample surveys on specific subject matters such as income distribution (Rajaraman, 1976). This implicitly assumes the absence of problems with secondary data available from published sources. Recent research suggests that such an uncritical reliance on or assumed reliability of data from published sources may be inauspicious. For example, Yeats (1989) evaluated the quality of trade data on developing countries. In contrast with the findings of a similar study on developed economies (Yeats, 1978), the author found severe inconsistencies in trade data for developing countries. Wells (1992) also compared four measures of agricultural output for Nigeria between 1962 and 1990. He concluded that the various aggregates show significantly different readings of agricultural growth. According to him, a decomposition of the aggregates of gross agricultural output shows, in some cases, considerable discrepancies in basic measures of crop production.

The severity of the problem of data inconsistency, and its implications for applied research, was brought out clearly at the various direct or indirect workshops of the African Economic Research Consortium (AERC). For example, at the World Bank sponsored

conferences on African Economic Issues, held jointly with AERC in Nairobi, Kenya, in June 1991, participants expressed serious concern about the low degree of reliability of published data upon which applied research works on Africa were based. A similar concern was expressed at the May 1991 AERC workshop, also in Nairobi, when participants in the various groups observed wide discrepancies in identical data series for the same country, and the wide variations in the findings and policy recommendations of the various studies on the same economy. The problem of data inconsistency should be of much concern because of its implications for planning and applied or policy-related research.

For example, using short-term consistency and long-term convergence as measures of reliability, Ariyo and Adenikinju (1996) demonstrate the importance of data reliability as a necessary condition for meaningful macroeconomic modeling and planning in Nigeria. The study found significant inconsistencies but reasonable level of convergence among data series on three macroeconomic aggregates. These are gross domestic product (GDP), exports and external debt. More detailed analysis, however, showed that the observed convergence was attributable to compensating errors among data series. The authors also note the negative implications of these findings on the validity of macroeconomic planning. Specifically, the study demonstrates that data inconsistencies may generate widely divergent short-term planning targets such as in three-year rolling plans. Also, the induced data convergence may hinder the attainment of the desired state envisaged in the nation's perspective plan.

Moreover, significant data divergence raises the problem of how to identify the authentic data series. Researchers patronizing different data sources may reach significantly different conclusions on identical research tasks. Similarly, there may be lack of consensus among policy makers confronted with widely divergent research findings and recommendations. As indicated by empirical evidence (Ashton, 1985), this may impair the degree of accuracy of decisions by policy makers.

As part of the determined efforts to address the problem of data inconsistency in Africa, AERC commissioned a study to characterize the nature and severity of the problem, using Nigeria as the initial contextual focus. The findings of the study reported by Ariyo (1996) show wide inconsistencies and lack of convergence among data on identical indexes being published by different organizations. More puzzling was the persistence of the problem with intra-organizational publications. This is in addition to similar observations between local and international data sources on Nigeria. In view of the negative implications of these findings on the validity of applied and/or empirical research, AERC commissioned another study to probe further into the underlying causes of the observed discrepancies in data on Africa. The research procedures and the findings of the latter study constitute the remaining part of this report.

III. Methodology

Research instrument

Two instruments were used for generating the required research evidence. First, we performed a content analysis of the technical notes in selected publications available at the time of research. The analysis focused on issues such as the currency in which indexes were reported and the currency conversion process, definition of index, data sources, and the reporting cycle. Second, questionnaires were sent to organizations that publish some or all of the indexes of interest to the study. The essence of the questionnaire was to elicit additional information not normally contained in technical notes, such as the status of the head of the data publication unit within the organization. The questionnaire also attempted to seek clarification on some information contained in the technical notes accompanying the selected publications. A copy of the questionnaire is attached as Appendix A.

Choice of indexes

The indexes selected reflect the consensus from discussions and exchange of ideas between the research team and the senior officials of AERC. The choice covers the thematic focus of the various research groups at AERC workshops, national income account items and social indexes. The specific indexes chosen for the study are:

- Trade (export and imports)
- Public debt (domestic and external)
- National income (gross domestic product and gross national account items savings)
- Price indexes (composite consumer price index and inflation rate)
- Social indexes (education, employment)

Sample selection

The selection of organizations for the study was guided by the availability of publications that contain some or all of the indexes being appraised and the perceived importance of

some organizations to macroeconomic management in Africa. As in the selection of indexes, the selection of the international organizations was the outcome of the consensus between the research team and AERC. Hence, the international organizations that constitute the sample for the study are:

- African Development Bank (ADB)
- UN Economic Commission for Africa (UNECA)
- International Monetary Fund (IMF)
- United Nations Conference on Trade and Development (UNCTAD)
- The World Bank (WB)
- World Trade Organization (WTO)

Other than UNECA, all the organizations responded promptly to the questionnaire.

IV. Data analysis

Technical notes

We first of all report the findings of the content analysis of the technical notes accompanying each publication, starting with the summary information on the data sources covered in the content analyses. Table 1 reports the names and publishers of two local (Nigerian) and six international publications on trade (export and import) data for Nigeria, while Table 2 reports a similar summary for debt (domestic and external). The debt summary covers two local and five international sources on external debt, and two local and six international sources on domestic debt. In respect of gross domestic product, Table 3, on national income accounts, includes one local and two international sources. It also shows that one international and three local sources publish gross national savings data on Nigeria.

Table 1: Trade statistics: Summary information on data sources

Item	Publication	Publisher	Remarks
Export Import	DOTS	IMF	External
	IFS	IMF	"
	WOT	WB	"
	AEFD	WB/UNDP	"
	ITSY	GATT	"
	FTSA	ECA	"
	ARSA	CBN	Local
	RET	FOS	"

Table 2: Public finance: Summary information on debt data sources

Item	Publication	Publisher	Remarks
External debt	IFS	IMF	Foreign
	WDT	WB	Foreign
	WOT	WB	Foreign
	AEFD	WB/UNDP	Foreign
	ARSA	CBN	Local
	AAS	FOS	Local
Domestic debt	IFS	IMF	Foreign
	ARSA	CBN	Local
	AAS	FOS	Local

Table 3: National income accounts: Summary information on data sources

Item	Publication	Publisher	Remarks
Gross domestic product	IFS	IMF	Foreign
	WOT	WB	Foreign
	PEFI	CBN	Local
Gross national savings	WOT	WB	Foreign
	ARSA	CBN	Local
	SB	CBN	Local
	ESR	NPC	Local

However, Table 4 shows that none of the selected international organizations publishes detailed data on price indexes and inflation rates on Nigeria.¹ Rather, the CBN and the FOS each have two publications on composite consumer price indexes. For inflation rates, FOS has two publications and CBN has one. Finally, Table 5 reports one local and one international source on Nigeria's education statistics, and three local and one international publications on employment. These results show the diversity of data publication sources and duplication of publications for each index.

Table 4: Price indexes and inflation rate: Summary information on data sources

Item	Publication	Publisher	Remarks
Composite price indexes	SSIN	FOS	Local
	AAS	FOS	Local
	SB	CBN	Local
	ARSA	CBN	Local
Inflation rate	SSIN	FOS	Local
	AAS	FOS	Local
	SB	CBN	Local

Table 5: Social indexes: Education and employment: Summary information on data sources

Item	Publication	Publisher	Remarks
Education	WOT	WB	Foreign
	SEIN	FME	Local
Employment	BLS	ILO	Foreign
	SSIN	FOS	Local
	AAS	FOS	Local
	SB/ARSA	CBN	Local

The next focus was a comparison of some features such as definition of terms, reporting currency, data collection sources and the specified format for data collection. Also covered are the valuation mechanisms and cut-off recognition time, among others. With respect to trade statistics, Table 6 reports the summary of the comparisons. It shows that some publications follow the United Nations’ guidelines for trade data collection and codification, while some have adopted a less specific definition. For example, the World Tables merely identifies goods across the customs borders as items of trade; some sources do not disclose the definitions adopted.

Table 6: Trade statistics: Summary of comparison

Publications									
Features	DOTS	IFS	WOT	AEFD	ITSY	FTSA	ARSA	RET	
Publisher	IMF	IMF	WB	UNDP	GATT	ECA	CBN	FOSNIG	
Definition	UN guidelines	UN guidelines	All goods across the border	Not given	Not given	UN guidelines	Not given	Not given	
Currency	U.S. dollars	Local currency	Local currency	U.S. dollars	U.S. dollars	U.S. dollars	Local currency	Local currency	
Sources	Report by each country	Report by each country; DOTS estimates	UNCTAD; UN- COMTRADE IFS	UN- ITS	GATT	DOTS	Administratively by CBN	CBN	
Format	Not standardized	Not standardized							
Valuation:									
Export	fob	fob	fob	fob	fob	fob	fob	fob	
Import	cif	cif	cif	cif	cif	cif	cif	cif	
Recognition time	Change of ownership	Not discussed	Not discussed	-	-	-	-	-	
Remark	Foreign	Foreign	Foreign	Foreign	Foreign	Foreign	Local	Local	

Table 7: Debt data: Summary of comparison (external debt only)

Publications						
Features	IFS	WOT	WDT	AEFD	ARSA	AAS
Definition	Direct debt of central government excluding guaranteed loans	Adopts WDT definition because it has same sources as WDT	Public and Publicly-guaranteed long-term debts, the use of IMF cards and estimated short term debts	Not stated	Definition of external debt not given. Domestic debt covers all monies borrowed by the government directly or through the use of debt instruments	As for ARSA
Currency	Local currency	U.S. dollars	U.S. dollars	U.S. dollars	Local currency	Local currency
Sources	Member countries of the Fund (IMF)	Debtor reporting system of World Bank	World Bank, from member countries of WB and from IMF	IMF and the World Bank	CBN	CBN
Conversion	-	Effectuated at official exchange rate of the creditor's currency to the U.S. dollar	Debt converted from other currencies to U.S. dollars by using average exchange rate for the year	No conversion but presented as obtained from IMF and WB	Converted to naira by prevailing exchange rate	As for ARSA

For valuation purposes, some international organizations adopt the local currency of each country, and others report in U.S. dollars. The data sources also differ across the board. While some sources rely on submission by each country, others derive theirs from single or multiple sources. In fact, only the CBN and World Bank's WDT appear to collect from primary sources. Also, it appears there is no standardized reporting format for most cases. Although there is uniformity as to the point of valuation of exports and imports, there is no consensus about the cut-off recognition time. Some sources adopt the change of ownership (the instrument for ownership is not stated), but others do not identify the approach used. Overall, there is lack of consensus across organizations on most of the issues relating to the collection, collation and reporting of trade data.

Table 7 reports the summary comparison of debt data. The discussion concentrates on external debt, because only the CBN reports on domestic debt, so there is no comparison with any other source. The scope of data definitions adopted by WOT and WDT is much wider than that of IFS. The AEFD and the CBN do not specify the definition adopted. Three of the international sources (WOT, WDT and AEFD) report in U.S. dollars either directly from creditors' sources or by converting from local currency or currency of repayment to U.S. dollars. The IFS reports directly in local currency (naira for Nigeria), although there was no information on how the local currency value was derived. CBN, on the other hand, converts from U.S. dollars to local currency using the ruling exchange rate at the time of conversion.

The data sources consulted vary widely by publication. Sources range from submissions by member countries of IMF to the debtor reporting system of the World Bank or a combination of both. No information was available on the extent of similarities or differences among the reporting systems, or the processing of submissions by member countries of IMF or the World Bank. Table 8 shows that none of the publications other than World Bank's WOT identify the definition of gross domestic product adopted. They probably assume that there is a generally accepted definition in the literature.

Further, only GDP is in U.S. dollars, while others report in local currency. Worse still, other than WOT, none of the sources specified the computation techniques used. In addition, the sources valued GDP at constant, factor cost and/or market prices. Hence, direct comparison is impossible unless GDP data are valued on the same base, an issue a researcher might inadvertently overlook. Similar observations apply to gross national savings, price indexes and inflation rates, and education and employment, reported in tables 9, 10 and 11, respectively.

Table 8: Gross domestic product: Summary of comparison on GDP

Publications						
Features	IFS	WOT	PEFI	SB	ESR	
Definition	No definition given	Not given	Not stated	Not stated	Not stated	
Currency	Local currency	U.S. dollars	Naira	Naira	Naira	
Source	UN System of National Accounts	World Bank	FOS-AAS	CBN	FOS and CBN	
Computation	Not stated	Computation in accordance with World Bank Atlas methodology The methodology not stated	Not stated	Not stated	Not stated	
Valuation	At constant price of a given year	Valued at both factor price and market price	Naira	Naira	Naira	

Table 9: Gross national savings: Summary of comparison on GDS

Features	WOT	ARSA
Definition	Defined as gross domestic income less total consumption	Gives the sectoral distribution of GDS
Currency	U.S. dollars	Naira
Source	World Bank	CBN
Computation	Not stated	Not stated
Valuation	Valued at constant prices	Naira

Table 10a: Inflation: Summary of comparison

Publications			
Features	SSIN	AAS	SB
Definition	Not stated	Not stated	Not Stated
Source	FOS	FOS	FOS
Procedure	Field Survey	Field Survey	-

Table 10b: Price indexes: Summary of comparison

Publications			
Features	SSIN	AAS	SB
Definition	Not given but said to be computed for urban and rural separately as consumer price index and pooled for both urban and rural and called composite price index	As for SSIN	As for SSIN
Source	FOS	FOS	FOS
Data Collection	Routine field survey SSIN	As for SSIN	As for SSIN
Timing	Base year: 1985=100		

Table 11: Social indicators: Summary comparison of statistics

a. Education

Publications		
Features	WOT	SEIN
Definition	Not stated	Not stated
Source	Country's Central Ministry of Education of Central Statistics Office	FME
Procedure	Note stated	Routine administrative duties

b. Employment

Publications				
Features				
BLS				
SSIN				
AAS				
SB/ARSA				
Definition	Not stated	Not stated	Not stated	Not stated
Source	Not stated	Not stated	FOS	FMELP
Procedure	Not stated	Not stated	Survey conducted by FOS	Not stated

Efforts were also made to assess the independence of the data sources being consulted by the various organizations. For this purpose, we developed a flow chart from the information available in the technical notes; the findings are shown in Figure 1. The column for comments shows that some agencies collect data from sources far away from the originating source. The ADB belongs to this category. Further, some agencies derive data from more than one. The process of choice or combination of data from more than one source poses a problem, the effects of which are yet to be ascertained. Still others do not indicate the originating source of data being disseminated or adopted by other organizations. These observations are revealing and deserve further investigation.

Figure 1: Data collection process: A tree diagram

Index	Tree diagram					Remarks
Trade	Customs Dept Fed. Min. of Trade	FOS CBN WB	UNCTAD IMF	ADB WTO		Two non-primary data sources for ADB; one primary and one non-primary data sources for WTO.
Debt	FMF	CBN WB	FOS	UNCTAD ADB		
GDP} DNS}	FMNP FOS	CBN	WB	ADB UNCTAD		Two seemingly independent data sources. However, FOS is a parastatal of the FMNP.
Inflation ILO	FOS	WB CBN	IMF	UNCTAD ADB		ADB derives data from both the IMF and the ILO.
Education	FMF	FOS	WB CBN UNESCO	UNCTAD ADB		Source of data to UNESCO not clearly identified.
Employment	FMELP FOS	CBN WB ILO	ADB UNCTAD			CBN derives data directly from both the FMELP and FOS. Source of data to ILO not identified.

Questionnaire

The second set of findings emanate from the analysis of the completed questionnaires from the five organizations noted earlier. Table 12 shows the number of publications by each organization. It is noteworthy that most organizations release more than one publication per index. Further, several indexes are normally covered in each publication. Hence, there exist many data series on identical indexes across various publications (multi-index, multi-publication). Each publication also derives inputs from several sources. The summary of the duplication of publications by index and the reasons adduced by the respondents are summarized in Table 13. It is important to note that inconsistencies exist even among identical data series within each organization (Ariyo, 1996). This arouses one's curiosity regarding the utility of these series to either the producer or the users.

We also analysed the frequency of the publications by each organization. The publication cycle ranges from monthly to biannual, while others are merely occasional. This classification is important for assessing the accuracy of provisional figures. For example, given the African environment, it may be difficult to collect accurate statistics on quarterly basis from most African countries. The frequency of publication also needs

Table 12: Publications containing identical economic indexes

Org.	Trade	Debt	GDP	GNS	Inflation	Education	Employment
CBN	1. Statistical Bulletin 2. Annual Report	Statistical Bulletin Annual Report	Statistical Bulletin Annual Report	NR	Statistical Bulletin Annual Report	Annual Report under Social Report	Statistical Bulletin Annual Report
FOS	1. Nigeria Trade Summary 2. Review of External Trade 3. Annual Abstract of Statistics 4. FOS Review of Nigeria Economy 5. Facts and Figures 6. Digest of Statistics	1. FOS Review of Nigeria 2. Annual Abstract of Statistics	1. National Accounts of Nigeria 2. Annual Abstract of Statistics 3. Digest of Statistics 4. FOS Review of Nigeria economy	As for GDP	1. FOS Review of Nigeria 2. Statistical News - Consumer Price Index in Nigeria	1. General Household Survey Report 2. Annual Abstract of Statistics 3. Digest of Statistics 4. Social Statistics in Nigeria	1. Annual Abstract of Statistics 2. General Household Survey Report 3. Labour Force Survey Report 4. Social statistics
ADB	1. African Development Report 2. Selected Statistics on Regional Member Countries (RMC)	As for Trade	As for Trade	As for Trade	As for Trade	As for Trade	Labour Force
IMF	1. International Financial Statistics 2. Direction of Trade Statistics	As for Trade	1. International Financial Statistics	NR	1. International Financial Statistics	NR	NR
UNCTAD	1. Handbook of Inter- Trade and Development Statistics 2. Commodity Yearbook	1. Handbook of Inter. Trade & Development Stats.	As for Debt	NR	As for Debt	As for Debt	As for Debt

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WB	1. World Tables 2. African Dev. Indicators 3. World Develop. Report 4. Trends in Developing Economies 5. Country Economic and Sector Reports	1. World Debt Tables and 1, 2,3, and 4 under Trade (External Debt Only)	As for Trade	As for Trade	As for Trade	Social Indicators of Development and as all for Trade	1. African Development Indicators
WTO	1. International Trade Trends & Statistics	NR	NR	NR	NR	NR	NR

NR: non-response.

Table 13: Indexes duplicated in publications

Org.	Trade	Debt	GDP	GNS	Inflation	Education	Employment	Remarks
CBN	Yes	Yes	Yes	NR	Yes	No	Yes	Annual Report usually carries provisional figures while Statistical Bulletin carries an update of the data published in the Annual Report
FOS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Data may appear in different forms such as in absolute as aggregates, rates or ratios. The coverage may also differ.
ADB	Yes	Yes	Yes	Yes	Yes	Yes	No	African Development Report is a research publication while Selected Statistics on RMCs is a statistical publication. Data on some indexes may appear with different figures in the publications.
IMF	Yes	Yes	No	NR	No	NR	NR	Data on trade are reported by both IFS and DOTS. Source of IFS is CBN while that of DOTS is FOS. Difference in the data sets if exists may be due to the data sources.
UNCTAD	Yes	No	No	NR	No	No	No	Only trade data are duplicated in both the Handbook and Commodity Yearbook. The objective is that these could serve as references for other publications.
WB	Yes	Yes	Yes	Yes	Yes	Yes	No	Publications are not normally issued at the same time. The published data may not be identical due to revision. Coverage may also vary depending on the purpose of publications.
WTO	No	NR	NR	NR	NR	NR	NR	NR

NR: no response

to be reconciled with the stated objectives for each publication, especially the occasional publications. Summary information on this is presented in Table 14. We observe that the World Bank discontinued the publication of the Trends in Developing Countries and World Tables because they duplicated information available from other sources. This is an important revelation, which deserves the attention of other organizations especially those with multiple publications on similar indexes. A cost-benefit (or value-added) analysis will assist various organizations in determining the optimal number of publications relative to the stated objectives.

Attempts were made to infer the level of importance attached to data-generating activities by each organization. In this connection, we believe that the level of centralization or decentralization of the activity determines the size and profile of the data-generating unit in the organization. For example, a centralized system will allow for economies of scale, cross fertilization of ideas and employment of specialists for each aspect of the data-generation process. The allocation of a huge budget to a centralized process will also warrant the elevation of the data-generating department to a reasonably high level in the organization. The name attached to each department will also indicate the scope of its activities and its interaction with other units within the organization.

Information relating to this issue is reported in Table 15. It shows that other than WTO, the five international organizations centralized their data-generating activities. Domestically, the CBN centralized, while the FOS decentralized its procedures. Incidentally, most respondents did not reveal the status of the data unit within the organization. We do note that a member of top management heads the data-generating activities at the CBN. This contrasts with the FOS in which the most senior officer at the operating level is a middle-level manager; this may be because the overall boss is a specialist in the subject, given that FOS does not engage in any other activity. Overall, the nature of response does not allow for unequivocal evidence to judge the level of importance attached to data-generating activities by the international organizations.

The objectives indicated by each organization for its data-generating activities are summarized in Table 16. It is noteworthy that only the ADB identified one single objective for its data-generating activities. The number of objectives identified by other organizations ranges from two (IMF, WTO and UNCTAD) to five (CBN). Public information and research are the most common objectives for all the organizations. The accuracy of data is very important for the realization of these objectives.

Table 17 summarizes the responses about the universality or peculiarities in the definitions of indexes covered by the study. Most agencies claim to follow the guidelines of specific frameworks, such as those of the United Nations, while others have adopted other variants. In spite of the wide differences in framework, it is observed that no organization admitted the adoption of any unique definition to suit its intended objectives. Others did not specify their own definitions. We believe this issue deserves serious attention, as it is potentially a major source of differences in data collection, measurement and update by the various organizations.

Table 14: Frequency of publications

Org.	Publication	Annual	Biannual	Other	Continued	Discontinued	Reason(s) for discontinuing
CBN	Annual Report Statistical Bulletin	Yes	Yes		Yes Yes		
FOS	FOS Review of the Economy Annual Abstract of Statistics Digest of Statistics Facts and Figures Statistical News: CPI Statistical News: Labor News Statistical News: Merchandise Index Social Statistics in Nigeria	Yes Yes Yes	 Yes Yes	 Monthly Quarterly Quarterly	Yes Yes Yes Yes Yes Yes Yes Yes Yes		
ADB	African Development Report Selected Statistics on RMCs	Yes Yes			Yes Yes		
IMF	International Financial Statistics Direction of Trade Statistics			Monthly Quarterly	Yes Yes		
UNCTAD	Handbook of Int. Trade & Dev. Statistics Commodity Yearbook	Yes Yes			Yes Yes		

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WB*	World Tables World Development Report Trends in Developing Countries	Yes Yes Yes	Yes Yes	Yes	It duplicates another publication, which was not disclosed
	World Debt Tables Social Indicators of Development African Development Indicators Country Economic & Sector Reports	Yes Yes	Occasional Occasional	Yes Yes Yes Yes	
WTO	International Trade-Trends and Statistics	Yes		Yes	

NA: not applicable.

* *African Economic and Financial Review* was jointly published with the United Nations Development Programme only once in 1992. Reasons for discontinuing could not be ascertained.

Table 15: Status of departments responsible for data collection

Org.	Is data collected centralised?	Name of department(s)	Publication by department	Status of head of dept.	Remarks/ observation
CBN	Yes	Research	Annual Report Statistical Bulletin	TM	
FOS	No	CPTC Information Services Div. " " Prices Unit Household Survey Division External Trade Division Social Statistics Division	FOS Review Annual Abstract Digest of Statistics Facts and Figures Statistical News: CPI Statistical News: Labour Force Statistical News: Merchandise Trade Social Statistics in Nigeria	MM (DD) LN (AD) LM (AD) LM (AD) OF (CS) LM (AD) LM (AD) LM (AD)	
ADB	Yes	Strategic Planning and Operations Policy	African Development Report Selected Statistics on RMCs	NR =	
IMF	Yes	Statistics	International Financial Statistics Direction of Trade Statistics	NR =	
UNCTAD	Yes	Central Statistics Section	Handbook of Int. Trade & Dev. Statis. Commodity Yearbook	NR =	

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WB	Yes	International Economics	World Tables World Development Report Trends in Developing Countries World Debt Tables Social Indicators of Development African Development Indicators Country Economic & Sector Reports	NR = = = = = =
WTO	No	Economic Research and Analysis Division	International Trades Trends and Statistics	TM =
				The response is non-centralization. A publication is reported and only one department.

Table 16: Data collection objectives: A comparison

Objectives	CBN	FOS	ADB	IMF	UNCTAD	WB	WTO
Planning	•	•					
Research	•	•	•		•	•	•
Programme evaluation	•	•				•	
Public information	•	•		•	•	•	•
Others:							
National policy formulation and evaluation	•						
Operational needs of organization				•			
Lending						•	

Note: Empty cells denote non-response.

Table 17: Definitions of indexes: A comparison

Org.	Index	Statement of definition	Universal	Peculiar
CBN	Trade	According to UN recommendations	•	
FOS		As for CBN	•	
ADB		NR	•	
IMF		According to UN "International Trade Statistics: Concept & Definition." 1982	•	
UNCTAD		According to UN recommendations	•	
WB		Exports and Imports: Goods across customs borders; exports FOB, imports CIF	•	
WTO		According to UN recommendations	•	

•: Responses

NA: Not applicable

NR: Non-response

Org.	Index	Statement of definition	Universal	Peculiar
CBN	Debt	Covers all external and domestic financial obligations of the federal and state governments	•	NA
FOS		As for CBN	•	NA
ADB		NR	•	NA
IMF		NR	NR	NR
UNCTAD		NR	NR	NR
WB		Public and publicly guaranteed long-term debt; the use of IMF credit and estimated short-term debt	•	
WTO		NR	NR	NR

Org.	Index	Statement of definition	Universal	Peculiar
CBN	GDP	Aggregates of values of activity sectors	•	
FOS		As for CBN	•	
ADB		NR	•	
IMF		Defined as sum of final expenditure	•	
UNCTAD		NR	NR	NR
WB		Computed at the purchaser values (market prices) plus net factor income from abroad	•	
WTO		NR	NR	NR

•: Responses

NA: Not applicable

NR: Non-response

Org.	Index	Statement of definition	Universal	Peculiar
CBN	GDS	Computed domestic saving by sector	•	
FOS		As for CBN	•	
ADB		NR	•	
IMF		NR	NR	NR
UNCTAD		NR	NR	NR
WB		Defined as gross domestic income minus total consumption	•	
WTO		NR	NR	NR

Org.	Index	Statement of definition	Universal	Peculiar
CBN	Inflation	As defined by FOS (composite consumer price index)	•	
FOS		Defined on expenditure outlet - food, accommodation, etc.	•	
ADB		NR	•	
IMF		Calculated from CPI: Changes in the cost of acquiring a fixed basket of goods and services by the average consumer	•	
UNCTAD		NR	NR	NR
WB		The price index of goods and services used for private final consumption of households	•	NA
WTO		NR	NR	NR

•: Responses

NA: Not applicable

NR: Non-response

Org.	Index	Statement of definition	Universal	Peculiar
CBN	Education	NR	NR	NR
FOS		Definition depending on "measurement" under consideration	•	
ADB		NR	•	
IMF		NR	NR	NR
UNCTAD		NR	NR	NR
WB		Definition depending on "measurement" of interest	•	
WTO		NR	NR	NR

Org.	Index	Statement of definition	Universal	Peculiar
CBN	Employment	Defined and provided for only low grade workers	•	
FOS		Defined by type of establishment	•	
ADB		NR	•	
IMF		Defined as recommended by the ILO 13th Internal. Conference of Labour Statisticians, Geneva, 1982	•	
UNCTAD		NR	NR	NR
WB		The average number of employees or persons engaged in a year	•	
WTO		NR	NR	NR

•: Responses

NA: Not applicable

NR: Non-response

Of equal importance is information about the data collection methods adopted by each organization, for which evidence is provided in Table 18. The table shows that primary or secondary methods or a combination of both are used by the organizations. It is noteworthy that none of the international organizations use more than one primary technique. That is, posted questionnaires are not complemented with follow-up cross-checks such as personal interviews. We appreciate that the cost of this follow-up might be prohibitive. The CBN, on the other hand, claims to complement its posted questionnaire with personal interviews. And while WDT claims to adopt a secondary method, it did not provide any additional information on the procedures used.

Table 18: Data collection procedures

Org.	Primary	Secondary	Primary & Secondary	Data collection method			Other (specify)	Post data collection check
				Posted questionnaire	Interview	Posted questionnaire & interview		
CBN			•			•		Yes
FOS			•	•	•			Yes
ADB			•		NR	NR	NR	NR
IMF			•	•				Yes
UNCTAD		•						
WB	•	•					Administrative	Yes
WTO		•		NR	NR	NR	NR	Yes

X: Responses.
NR: Non-response.
Empty cells: Not applicable.

Table 19: Adoption/adaptation of secondary data

Org	Data source	Trade		Debt		GDP		GNS		Inflation	
		Data adjusted?	Method of adjustment	Data adjusted?	Method of adjustment	Data adjusted?	Method of adjustment	Data adjusted?	Method of adjustment	Data adjusted?	Method of adjustment
CBN	Primary & secondary	YES	To reflect data obtained through the Banking Sector	YES	To reflect data obtained through foreign operations and banking operations						
FOS	Primary & secondary	NO									
ADB	Primary & secondary	NO		NO		NO		NO		NO	
IMF	Primary & secondary									YES	Ratio splicing the different versions reported by authorities and rebating to 1990. Break-signs added to indicate changes in coverage

Org	Data source	Trade		Debt		GDP		GNS		Inflation	
		Data adjusted?	Method of adjustment	Data adjusted?	Method of adjustment	Data adjusted?	Method of adjustment	Data adjusted?	Method of adjustment	Data adjusted?	Method of adjustment
UNCTAD	Secondary	NO		NO		NO		NO		NO	
WB	Primary & secondary	NO		NO		NO		NO		NO	
WTO	Secondary	NO		NO		NO		NO		NO	

Empty cells: Not applicable

Note: No organization responded to any question on education and employment.

Table 20: Problems encountered in data collection

Problems	CBN	FOS	ADB	IMF	UNCTAD	WB	WTO
Non-response	•	•	•			•	
Late response	•	•	•	•		•	•
Difference in presentation method		•	•			•	
Incomplete or missing data	•	•	•			•	•
Processing errors		•					
Differences in definition of index		•		•	•		
Any other problem	NR	NR	NR	NR	NR	NR	NR

X: Organization response.

NR: Non-response.

The nature and extent of adjustment to data collected from primary and secondary sources is a major source of data divergence among organizations. Attempts were made to provide some information relating to this issue, and the findings thereon are reported in Table 19. Other than IMF for inflation, none of the international organizations admitted making any adjustment to the data collected from primary or secondary sources. This is not likely to be true, and this issue needs further probing by future research. Finally, the organizations were requested to identify the major problems encountered in their data-generating activities. As shown in Table 20, late or non-response and incomplete or missing data appear to be some of the most serious problems identified. Of equal concern is the difference in definition of terms, a fact that seems to contradict the earlier response implying the adoption of generalizable definitions of each index by the various organizations.

V. Discussion of research findings

The findings of this study have raised some issues and revealed some of the major causes of divergence among macroeconomic data on African countries. The causes can be categorized into three major classes. The first class contains problems and differences in data processing and management procedures. This category relates to the attitude and activities (or non-activities) of countries expected to render data returns to the various organizations; for example, most of the respondents to the questionnaire identified non-response by member countries as a major problem affecting their data-generating activities. Also, while some countries do not respond in good time, others do not conform with the reporting format required by the different agencies.

The second category relates to the level of cooperation from the respondent organizations in terms of accuracy and timeliness of responses or rendition of required returns. The third relates to the absence of generally accepted formats for rendering or reporting data.

The process of converting or re-processing returns to the required format will also generate its own errors, thereby distorting the real picture of events and jeopardizing comparability of published data. The process of collecting intra country data series also leaves much to be desired, given the usual disagreements among interested parties on official figures. This situation creates suspicion about the authenticity of the reported figures, to the extent that some organizations have stopped publishing data series on some African countries. Within the second category, the definition of concepts is a major issue. While some organizations specify the definition of each concept, others do not. For example, the definition of external debt adopted by the IFS is much narrower in scope than the definition adopted by other organizations. The definition of trade transactions was also not uniform and the time along the trading process when an activity qualifies as trade is still fuzzy.

We also observed that some organizations have adopted some peculiar definitions, the details of which were not provided in the completed questionnaires. Even those that claim to follow the guidelines of some international agencies such as the World Bank and the United Nations did not indicate their mode of compliance with or the extent of modification to the guidelines. Related to this are the data estimation and updating procedures adopted. As noted earlier, some member countries fail to render required returns in good time, and others do not conform with expected formats. Under this circumstance, most organizations rely on data from sister organizations, while the in-house staff also use their best judgement to make projections as a stopgap measure. However, we have no information about the nature and extent of these projections, or

whether there is any standardized procedure for the estimation. We do emphasize that as long as different organizations use divergent updating and estimation procedures, there will always be divergences among data series on identical indexes.

Also of interest is the duplication of publications of data series on identical items. Even if the various publications had different objectives, efforts should have been devoted to ensuring the reliability of the published data series rather than committing resources to the replication of data series in different outlets. More puzzling was the discovery of wide divergences among data series on identical indexes being published by the same organization. Since the same sources underlie these publications, it appears that non-standardized data estimation procedures and differences in cut-off periods may account for the observed divergences. The organizations concerned are advised to evaluate the cost-benefit of retaining these inconsistent data series across different intra-organization publications. In particular, it is important to set priorities between the need for data reliability and the desire for a large number of data publications even at the expense of inconsistent data.

The valuation of published data series poses another major problem to data consistency, in two respects. The first relates to the application of some denominators such as price indexes in order to determine the real values of some data series. There is hardly any information about the derivation of the indexes used, whether GDP deflator, inflation rate or composite consumer price index. The choice and differences in the derivation of these denominators may lead to significant differences in the real values reported or published. A major contributor to the observed data problem is the process of converting from local currency to U.S. dollars or vice versa. For example, exchange rates fluctuate widely in some countries, hence the rate adopted on a specific date may make much difference in reported values. Similarly, some countries operate a dual exchange rate system, and lack of consensus among data-generating organizations on which rate to use and at what point in time may lead to widely divergent data series.

Another issue relates to the usefulness of technical notes to publications. We observe that many publications do not provide specific definitions of the concepts, while the computational procedures are hardly highlighted. Also, the recognition time is not normally identified in the technical notes, especially in respect of trade data. Even assuming the required details were provided, it is doubtful whether users pay any serious attention to the technical notes. The information value of the technical notes to users therefore needs to be evaluated. Another issue is the usefulness of the technical notes in comparing or converting data across publications. Available evidence indicates that researchers often pool data from different publications, given the inadequacy of time-series data from a single source. However, we are of the candid opinion that researchers hardly consult the technical notes in each publication, nor do they effect appropriate transformation or conversion to enhance the equivalence of the data series from different sources. Thoughts should therefore be given to ascertaining the ways in which researchers use technical notes to publications and their role in enhancing comparability of data across sources.

VI. Concluding remarks

This study has provided useful insights into some of the underlying causes of the inconsistencies in data on African economies. As noted earlier, the persistence of this problem poses a great threat to the accuracy and degree of realism of macroeconomic planning and the accuracy of policy decisions. Adequate efforts must therefore be devoted to addressing the problem. In light of the findings of this study and evidence from other sources, we offer the following suggestions for active consideration. First, there is an urgent need to strengthen the data-generating and management capability of African countries. In particular, there is need to enhance a positive posture towards generation of accurate and timely data. The negative implications of doing otherwise should be brought to the attention of policy makers at the highest levels of government. In addition, most African countries depend heavily on international and multilateral institutions for support. Ability and willingness to generate accurate data required for the regular macroeconomic projections should be made a condition precedent for enjoying the various facilities of these institutions.

Second, there is need to review, re-design and enforce generally acceptable and verifiable definitions of the various concepts in order to mitigate the negative effects of heuristics and biases associated with discretionary definitions and updating procedures by the in-house staff of the various organizations. The current general guidelines or their enforcement appear inadequate, and lessons may be learned from the accounting profession, which has successfully combined uniformity of standards with flexibility in choice among eligible standards and procedures. Third, it is desirable for the various organizations to identify specific and unequivocal sets of objectives underlying each data publication. This will enhance the consistency of the data-generating procedures with the attainment of the underlying objective. The heuristics and biases underlying the process can more easily be identified once the objectives are unambiguously stated.

Further, a cost-benefit appraisal of issuing more than one data publication by an organization should be undertaken. Whenever multiple publications are retained, the producing organization should articulate the rationale, and must ensure consistency among the different data series on identical indexes. The process of currency conversion is another very potent source of data divergence especially for countries with volatile foreign exchange systems and/or dual exchange rates. Hence, there is need for adequate closure of the behaviour and characteristics of a country's exchange rate within the reporting period. It is even desirable for all publishing organizations to reach a consensus on the exchange rate to use for the conversion, and strive to adopt a common reporting currency.

Finally, general and country-specific studies are required on various aspects of data quality problems in Africa. These should include the identification of the causes of discrepancy among partner country trade data and, most importantly, the identification and satisfaction of the data-related capacity needs of each African country. The other causes of negative attitudes towards data recording and rendition of reliable returns by member countries also need to be thoroughly investigated. Evidence from the foregoing will enable us to determine why Africa is uniquely worse than other areas of the world and to design appropriate strategies for addressing the problem.

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Appendix A

Summary of content analysis of technical notes to data publications

Indexes and publications

1. Trade statistics:	Exports Imports
2. Public finance:	Domestic debt External debt
3. National income Accounts:	Gross domestic product Gross national savings
4. Price indexes:	Composite consumer price indexes Inflation rate
5. Social indicators:	Education statistics Employment statistics Health statistics

Trade statistics

Six external and two internal data sources for trade (export and import) statistics, were available. Detailed information about each source is provided in Table 1 in the text.

Review of data collection procedure by source

Direction of Trade Statistics (DOTS):

Definition: Exports and imports are defined as “all goods that add to or subtract from the material resources of a country”. This is consistent with UN guidelines.

Unit of measurement: The unit of measurement is U.S. dollars, by converting local currency on the basis of exchange rates published by the International Financial Statistics.

Data collection procedure: Member countries provide the IMF with export and import data by country of destination and country of origin. No standard data reporting format was provided by DOTS. Hence, countries report either in their local currency or in U.S. dollars. Frequency of reporting also varies, ranging from monthly through quarterly to annually. Data are estimated through the data management system (DMS) from records of operating partners and extrapolation from most recent records.

Timing: The UN recommends that “exports and imports should be recorded at the moment ownership of relevant goods changes from residents to non-residents”. Compliance with the recommendation has been found impossible by many countries, however.

International Financial Statistics (IFS)

Definition of indexes: The IFS adopts the UN guidelines.

Unit of measurement: Trade data are reported in each country’s local currency and then after conversion from U.S. dollars.

Data collection procedure: Member countries of the IMF report their trade data to IFS. Current trade statistics are not available for oil exporting countries, however, and are therefore derived from DOTS estimates.

World Tables (WOT)

Definition: Exports and imports are defined as all goods moving across customs borders.

Unit of Measurement: U.S. dollar

Procedure for data collection: Data are collected from UNCTAD data base supplemented with data from the UN COMTRADE data base and the IMF’s International Financial Statistics, partner countries’ sources, and World Bank staff estimates.

African Economic and Financial Data (AEFD)

Unit of currency: The unit of currency adopted is the U.S. Dollar.

Procedure for data collection: Data are derived from the International Trade Statistics (ITS) Yearbook and other sources such as the World Bank and UNCTAD.

International Trade Statistics (ITS) Yearbook

This publication is somehow special and by reporting total trade tables by commodities.

Definition of Indexes: Adopts or appears to follow UN guidelines.

Procedure for data collection: Data are obtained from countries' reports to GATT.

Foreign Trade Statistics for Africa (FTSA)

Definitions: Adopts the UN guidelines.

Data collection procedure: Quotes DOTS as its source.

Comments and Observations on External Sources

Most publications adopt UN guidelines for the definition of trade data, and they all value export at f.o.b. and imports at c.i.f. values. There is no adequate information to compare the timing of transactions.

DOTS and IFS appear to be the two most authoritative sources for supply of data to our publications. In relative terms, DOTS appears to be the foremost source to which most member countries of IMF report directly. However, DOTS occasionally resorts to IFS estimates, especially for developing countries that fail to report their trade data. Non-rendition of trade data is said to be more serious with oil exporting countries. More often, IFS relies more on DOTS data. All sources agree that discrepancies often arise among data published by different sources or even between successive publications of the same body. Differences also occur between trade records of partner countries. Generally, the sources agree that discrepancies arise from:

- time lag as a result of distances between trading partners
- differences in the bases and timing of valuation
- differences in trade data reporting systems
- instability and non-uniformity policy on foreign exchange used for conversion to and from US dollars
- errors arising from data estimation and extrapolation techniques

Internal data sources

Annual Report and Statement of Accounts:

Definition of Indexes: Not stated.

Unit of measurement: Local currency (the naira).

Data collection procedure: The procedure for data collection is purely administrative. It is the routine assignment of the bank.

Timing, conversion and estimation: No information.

Review of External Trade (RET)

Data collection procedure: Trade data collected from CBN.

General comments on trade data

This comment covers all sources studied both external and internal. It appears that CBN is the only independent domestic source of trade data on Nigeria. Since the other major source, the FOS, merely lifts CBN's figures, there is no basis to compare trade data from intra-country sources. In addition to the *Annual Report and Statement of Accounts*, the CBN also publishes the *Statistical Bulletin* and *Nigeria's Principal Economic and Financial Indicators*, both of which update and provide time series lifted from the ARSA. This accounts for the lack of data discrepancies among these CBN sources.

A similar picture seems to apply to external sources, with DOTS and IFS relying on member countries of the IMF as primary data sources. However, there may be differences in the procedures adopted by each member country, unfortunately, the CBN provides no such information. Information contained in the technical notes also suggests that delay in the rendition of data by member countries is a principal cause of disparity, because the publishers resort using data provided by trading partners. The "insincerity" of some agents connected by trade with developing and oil-producing countries for purposes of capital flight in the recording and reporting of their export and import trades is another cause of disparity in published data.

Some problems such as the timing of records may be difficult to overcome. For example, at the time of arrival at the borders of importing countries, the value might have changed — especially over a long shipping period and in cases where currency conversion is affected by foreign exchange fluctuations.

Public finance

Review of data collection procedure

World Debt Tables (WDT)

Definition: WDT defines the total external debt stock of a nation to include public and publicly guaranteed long-term debt, private non-guaranteed long-term debt, the use of IMF credit and estimated short-term debt.

Unit of measurement: External debt is converted to U.S. dollars from the currencies in which the debt is repayable or the currency in which transaction took place.

Data collection procedure: Principal sources include reports of the World Bank, IMF and member countries.

International Financial Statistics (IFS)

Definition: IFS focuses narrowly on direct debt of central government, excluding guaranteed loans.

Unit of currency: The IFS values and reports a nation's public debt in the local currency.

Data collection procedure: Data obtained from IMF member countries.

World Tables (WOT)

Definition: Not specifically stated, although the data source is the debt reporting system (DRS) of the World Bank.

Data collection procedure: In accordance with the DRS supplemented by World Bank staff estimates.

Unit of currency: The same as for WDT.

African Economic and Financial Data (AEFD)

Definition: Based on IMF and World Bank procedures.

Unit of currency: The external debt is converted to and reported in U.S. dollars.

Data collection procedure: The data sources are the World Bank and the IMF.

Comments and observations on external sources

Three of the four external sources consulted — WDT, WOT and AEFD — use the same broad definition of external debt comprising government debt and debt-guaranteed by the government including the use of IMF credit cards and estimated short-term debts. They also adopt the debtor reporting system (DRS) of the World Bank (note that AEFD does not report debt data on Nigeria). IFS, on the other hand, defines external debt as direct government borrowing from the IFIs excluding those guaranteed by the government. The figures are therefore likely to be lower than the figures for other sources.

The foregoing suggests that differences in definition may be the main source of discrepancies in external debt data. Harmonization of definitions may therefore significantly minimize these discrepancies among the variables sources.

Internal sources

As noted earlier, the two internal sources consulted are ARSA of the CBN and AAS of the FOS. Other publications of the CBN, such as the *Principal Economic and Financial Indicators* (PEFI) and the *Statistical Bulletin* (SB), directly use the content of ARSA.

Annual Report and Statement of Accounts

Definitions: No clear-cut definition of either external or domestic debt.

Data collection procedure: The CBN generates data from its routine operations, and also from IMF.

Valuation: All external debt from different sources is dominated in U.S. dollars, but converted to naira at the prevailing exchange rate. Domestic debt is also sourced and recorded in naira.

Annual Abstract of Statistics

Definitions: The FOS quotes the CBN and the IMF as its sources.

Overall comments on public debt data

Practically speaking, the CBN is the only domestic source of public debt data on Nigeria. Therefore, there is no basis for comparison with other local sources. Most of the external sources agree on a definition of external debt that is broader than that of IFS. The CBN, however, does not provide a specific definition of external debt. Evidence is required to ensure the extent of comparability of statistical data between local and external sources. Furthermore, fluctuations in exchange rates may affect conversion to U.S. dollars.

National income accounts

Under this category, we appraised data on gross domestic product (GDP) and gross domestic savings (GDS). Three international publications, WOT, IFS and AEFD, and two local sources, ARSA and AES, were consulted for GDP data. For gross national savings, WOT was the only external source publishing data on this index. There are three sources available locally, however. These are the *Economic and Statistical Review* (ESR) of the National Planning Commission; ARSA and the *Statistical Bulletin* (SB), both published by the CBN. Summary details about these sources are shown in Table 5 in the text.

World Tables

Gross Domestic Product (GDP)

Definition: The GDP at market price is defined as the sum of factor costs and indirect taxes less subsidies, while GDP at factor cost is derived by subtracting net indirect taxes from GDP at market price.

Data collection procedure: Data obtained from national statistical offices supplemented by World Bank staff estimates.

Gross national savings (GNS)

Definition: The GNS is defined as gross domestic income less total consumption.

Data collection procedure: These are derived from national accounts data collected from national statistical offices and World Bank staff estimates.

Valuation: It is valued at current prices and reported in national currency.

International Financial Statistics (IFS)

Definition: The GDP is not specifically defined. However, available data on GDP are given at constant prices in relation to a given base year, which is non uniform for all countries.

Data collection procedure: Based on the United Nations System of National Accounts as reported by national authorities. Data collection and reporting system is not standardized, however.

Valuation: The GDP in most cases and especially for Nigeria is reported in national currency.

Comments and observations on external sources

There seems to be a general assumption of the understanding of the concept of GDP or GNP and their measurement. Hence, none of the sources provided any specific definition.

The data source is different for each publication, and it is likely that each source reported different data sets.

Internal sources:

The PEFI - on GDP

Definition: No specific definition is provided.

Valuation: The GDP is valued in local currency.

CBN-ARSA - on GDS

Definition: The ARSA endeavours to give sectoral values of gross domestic savings. These sectors form the components of the GDS and can therefore serve as its definition by ARSA. The savings statistics is broken down into savings and time deposits with banks, the National Provident Fund, Federal Savings Bank, Federal Mortgage Bank and others.

Valuation: The GDS is valued in local currency.

Data collection procedure: Data on GDP and GDS are administratively collected and reported by the CBN, although the procedure used is not disclosed.

Statistical Bulletin (SB) of the CBN - on GDP

The *Statistical Bulletin* data are based solely on information provided by the CBN. Thus, the characteristics of the data set are similar to those reported by ARSA.

Economic and Statistical Review (ESR) - on GDP

Data collection procedure: ESR refers to the CBN and Nigeria's Federal Office of Statistics as its sources. The process of integrating evidence from these two sources is not disclosed.

General comments and observation

The major uncertainty here relates to lack of a precise definition of GDP and the procedures for its compilation. The latter is not likely to be uniform across data sources. The second aspect relates to the computation of real values, since inflation rates applied by each source may differ. Finally, differences in base year used need to be reconciled, otherwise real values of identical indexes might not be comparable. These are issues to be resolved to enhance the comparability and also the convergence of GDP values across data sources. For GDS, the major problem relates to scarcity of data sources. In addition, not much information was provided on the data collection procedures.

Price indexes

We also appraised price indexes given the importance and prominence of prices in determining real values of key macroeconomic aggregates such as gross domestic product,

investment and savings. The comparison of real macroeconomic indexes may be unrealistic unless identical inflation values are used as denominator. Consumer or composite price indexes show the price changes over a period of time relative to a base period or year. Inflation rate, on the other hand, compares aggregate price changes between successive years. In this connection, we compare inflation rates as well as composite price indexes. Data on these indexes were available only in local publications.

Composite consumer price indexes (CCPI)

The characteristics discussed here apply to other sources for two reasons. First, two of the publications, SSIN and AAS, are published by FOS and are based on identical data collection procedures. The other two, the SB and the ARSA, published by the CBN are lifted from FOS sources. Hence, in reality, the FOS is the only source of information on price indexes in Nigeria.

Social Statistics in Nigeria (SSIN)

Definition: CCPI is the pooled consumer price indexes for both urban and rural areas of the economy. Also reported are separate indexes each for urban and rural areas. Each index is based on prices of a basket of commodities purchased and consumed by a representative set of households in selected centres across the country.

Data collection procedure: The data are generated through field survey routinely undertaken by the Federal Office of Statistics (FOS). The base year has been 1985 for the past decade.

Inflation Rate

Data on inflation rate are contained in SSIN and AAS published by FOS and also in the *Statistical Bulletin* (SB) published by the CBN.

Data collection procedure: The data for SSIN and AAS are generated from the same field surveys routinely conducted by the FOS, and the SB published by CBN uses data from FOS.

Social indexes

Data were available for only two social indicators: education and employment. Externally only WOT provides data on education; the local sources were indicated in Table 8.

Education statistics

World Tables (WOT)

The indicators available in this publication include:

- Public expenditure on education
- Primary school enrolment
- Primary school enrolment ratio; female
- Secondary school enrolment

Data collection procedure: The data are collected from each country's central Ministry of Education or the Central Statistics Office such as Nigeria's Federal Office of Statistics. However, data on Nigeria are not available for many of the years in the publication.

Statistics of Education in Nigeria (SEIN)

Data collection procedure: Data are collected as routine administrative duties of the Planning, Research and Statistics Division of the Federal Ministry of Education. Data are available in the publication on all levels of Nigeria's educational system, and the data on primary and secondary education are comparable. In addition, FOS publications are based on information provided by SEIN. Hence we consider the characteristics discussed in SEIN to be applicable to FOS publications.

Employment statistics

Bulletin of Labour Statistics

The data source is not indicated and there is need for detailed explanatory notes on the series published. It was also observed that data on Nigeria are not available in this publication.

Social Statistics In Nigeria (SSIN)

Definition: The definition or data generating process was not disclosed. Data are reported along sectoral lines such as beverages, leather products and wood products, and based on percentage employment by type of activity.

Data collection procedure: The data are collected through the general household survey conducted annually by FOS. Thus, the data are primary.

Annual Abstract of Statistics (AAS)

Data collection procedure: The data are collected through a survey conducted by FOS. They are not comparable with those of SSIN, however, because of differences in the method of collection and presentation. The employment data in AAN are categorized by industry, such as mining, agriculture and so on. The number of people employed in each industry is also provided.

Statistical Bulletin (SB) and ARSA

These are published by the CBN and report identical employment data series.

Data collection procedure: The publications quote the Federal Ministry of Employment, Labour and Productivity (FMELP) as their source, which publishes data on registered unemployment and vacancies declared. Thus, the data are not comparable with any of those published by FOS in SSIN and AAS.

Appendix B: Questionnaire

Study of data collection procedures

The findings of a recent study indicate significant divergence and inconsistencies among data being published on Nigeria by different organizations. This poses a threat to the reliability of these data series and to the validity of research findings based on them, and may also lead to significant differences in policy recommendations and/or decisions. It is therefore desirable to identify the major causes of the data inconsistencies and to suggest appropriate solutions.

It is in the pursuit of this goal that we have developed a questionnaire as a means of eliciting relevant information that will enhance the identification of some of the sources of the observed data inconsistencies. Similarly, we consider your organization an important source of published data on Nigeria. We therefore solicit your cooperation by completing the attached questionnaire, and to supply any additional information or suggestions you consider relevant to the attainment of the objectives of this study. To ensure its safety and timely delivery, kindly return the completed questionnaire by courier or express mail to:

Dr. Ademola Ariyo
Research Coordinator (Data Evaluation)
Department of Economics,
University of Ibadan,
Ibadan, NIGERIA.

Your prompt action, preferably within fourteen (14) days from the date of receipt of this document, will be highly appreciated.

Sincerely,

Ademola Ariyo, PhD

Research Coordinator

SECTION A: BACKGROUND INFORMATION

1. Name of Organization:
2. Please provide a list of your organization's publications containing any of the following indexes:

Index	Publication(s) (please list all as applicable)
(a) Trade: Exports
Imports
(b) Debt: External
Domestic
(c) Gross Domestic Product (Nominal)
(d) Gross National Savings
(e) Inflation Rate
(f) Education Statistics (please itemize)
(g) Employment Statistics (please itemize)	
(i)
(ii)
(iii)

- (i) Does any index appear in more than one publication?

Yes ()

No ()

(ii) If “Yes” to item 3(i), are the data series on each index identical in all the publications?

Yes () No ()

If “Yes” to item 3(ii), what motivated the repetition in more than one publication? (please explain briefly)

.....

.....

.....

.....

(iv) If ‘No’ to item 3(ii), why the difference in the data series? (please explain briefly)

.....

.....

.....

.....

4. How regular is each publication indicated in item (2) above?

Regularity			
Publication	Annual	Bi-annual	Other (specify)

5. Has there been discontinuity of any publication?

Yes () No ()

6. If “Yes” to item 5, which of the listed publications were discontinued?

Discontinuity		
Publication	Year	Reason

7. Has there been discontinuity in the publication of any index?

Yes () No ()

8. If “Yes” to item 7, which of the indexes were discontinued?

		Discontinuity	
Index		Year	Reason
(a)	Trade: Export	.....
		
(b)	Debt: External	.....
		
	Domestic	.....
		
(c)	Gross Domestic Product (Nominal)	.....
		
(d)	Gross National Savings	.....
		
(e)	Inflation Rate	.....
		
(f)	Education Statistics (please itemize)	.....
		

10. Which of the following coincides with the objective of your data collection and publication activities? (you can tick more than one objective)

- Planning ()
- Research ()
- Programme evaluation ()
- Public information ()
- Others (please specify below) ()

11. Please give a concise definition of each index as used in the publication, stating whether each definition is universally acceptable (standard) or adopted to suit the objective of your organization (you can make use of additional sheet (s) if required).

Index	Definition	Universal	Peculiar
(a) Trade:	Export	.....	.....
	Import	.....	.....
(b) Debt:	External	.....	.....
	Domestic	.....	.....
(c) Gross Domestic Product (Nominal)		.....	.....
	
(d) Gross National Savings		.....	.....
	
(e) Inflation Rate		.....	.....
	
(f) Education Statistics (please itemize)		.....	.....
	
(g) Employment Statistics (please itemize)		.....	.....
	

Note: If this information is contained in the technical notes to each publication, kindly send a copy of the relevant documents.

SECTION B: DATA COLLECTION PROCEDURE

12. What are the sources of data collection?

Primary () Secondary ()
Both (Primary & Secondary) ()

13. If primary, which of the following methods was employed?

- (a) Questionnaire by post ()
- (b) Interview ()
- (c) Posted Questionnaire followed by interview ()
- (d) Any other method (please specify): ()

.....

14. Was there any post-data collection check or review?

Yes () No ()

15. If the source is secondary, please list the sources with respect to each index.

Index		Source
(a)	Trade:	Export
	
	Import	.....
	
(b)	Debt:	External
	
		Domestic
(c)	Gross Domestic Product (Nominal)	.....
	
(d)	Gross National Savings	.....
	
(e)	Inflation Rate	.....
(f)	Education Statistics (please itemize)	.....
	
	
(g)	Employment Statistics (please itemize)	.....
	

16. Does your organization normally adjust the figures obtained from secondary sources?

Yes ()

No ()

17. If “Yes” to item 16, please indicate the nature or direction of adjustment as indicated in the table below:

Direction of adjustment				
Index		Always Upwards	Always Downwards	Either Way
(a) Trade:	Export	.....	
	Import	.....	
(b) Debt:	External	.....	
	Domestic	.....	
(c)	Gross Domestic Product (Nominal)	.....	
(d)	Gross National Savings	.....	
(e)	Inflation Rate	.....	
(f)	Education Statistics (please itemize)	.....	
			
(g)	Employment Statistics (please itemize)	.....	
			

(If applicable, please provide evidence of the model normally employed for the adjustment).

18. For subsequent issues, how do you update your published data?
- (a) Going back to the field (primary approach) ()
 - (b) Adopting figures of selected secondary sources ()
 - (c) Adjusting figures of selected secondary sources as indicated in item 17. ()
19. What specific problems do you normally encounter in getting reliable data for each index?
- (i) Non-response ()
 - (ii) Late response ()
 - (iii) Differences in presentation methods ()
 - (iv) Incomplete or missing data ()
 - (v) Processing errors ()
 - (vi) Differences in definition of index ()
 - (vii) Any other problem (please specify) ()
20. Any other information? (Please, feel free to make any general comments or suggestions)

Appendix C

Definition of abbreviations

Publications

AAS	Annual Abstract of Statistics
AEFD	African Economic and Financial Data
ARSA	Annual Report and Statement of Accounts
BLS	Bulletin of Labour Statistics
DOTS	Direction of Trade Statistics
ESR	Economic and Statistical Review
FTSA	Foreign Trade Statistics for Africa
IFS	International Financial Statistics
ITSY	International Trade Statistics Yearbook
PEFI	Nigeria's Principal Economic and Financial Indicators
RET	Review Abstract of Statistics
SB	Statistical Bulletin
SEIN	Statistics of Education In Nigeria
SSIN	Social Statistics In Nigeria
WDT	World Debt Tables
WOT	World Tables

Organizations

CBN	Central Bank of Nigeria
ECA	Economic Commission for Africa
FME	Federal Ministry of Education, Nigeria
FOS	Federal Office of Statistics, Nigeria
GATT	General Agreement on Tariff and Trade
ILO	International Labour Organization
IMF	International Monetary Fund
NPC	National Planning Commission, Nigeria
UNDP	United Nations Development Program
WB	World Bank

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